



VisionZ

User Guide
VisionZ Control Console

Table of Contents

Revision History.....	3
Package Contents	3
Important Safety Information	3
Keypad Layout.....	4
Installation	5
Controls	6
Using the VisionZ console	8
Default Mode	8
Status Bar	8
Auto Exposure Mode	8
Manual Exposure Mode	8
Memory Mode	8
Manual Focus Mode	9
Light Intensity Mode.....	9
Light On/Off	9
Hi-Contrast Mode.....	9
Image Capture	9
Magnification.....	9
Freeze.....	9
Overview.....	9
Cross Hairs	9
Brightness and Gain	10
Grid and Cursor Measurement	10
Calibration Mode.....	10
Grid Mode	10
Grid Adjust Mode	10
Cursor Mode	10
Front Keypad Lockout.....	10
Troubleshooting.....	11
Taking Care of your Keypad.....	11
Appendix: Functions and Terms.....	12
Specifications	12
Warranty	13

Revision History

Version	Date	Description
1.0	4/2013	Initial release

Package Contents

Your VisionZ package contains:

- VisionZ Console external keypad
- Operation manual

Important Safety Information

Please read all of the following instructions before setting up.

- To prevent fire or electric shock please ensure this unit is kept away from all liquids. Do not use the unit in excessively damp or wet areas and do not expose it to rain, snow, etc.
- Before cleaning the unit, please ensure that it is unplugged. Use a slightly damp cloth to clean the exterior. Do NOT use solvents or aerosol cleaners.
- This unit should never be opened. Unauthorized servicing will invalidate your warranty. If you encounter any problems with this unit please contact your local dealer.
- The VisionZ console is designed to connect only to VisionZ products. Do not connect it to a PC or any other electronic equipment as damage to both products may result.
- Only connect the VisionZ console when the VisionZ main unit is powered off.

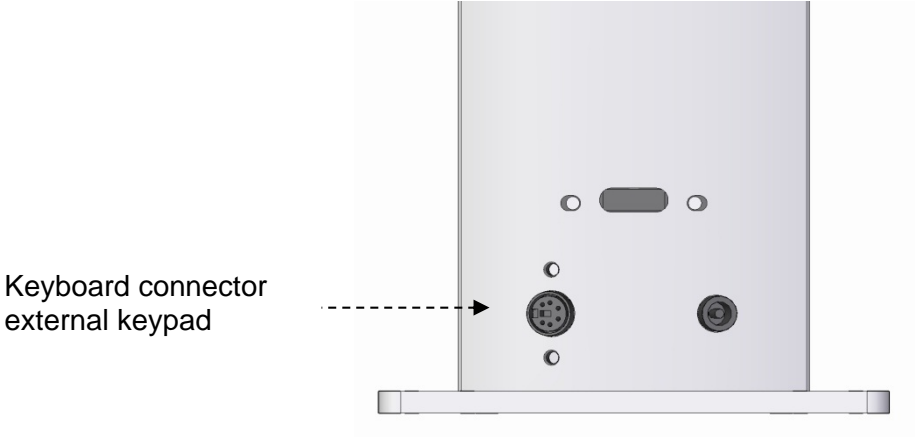
Keypad Layout



Installation

This keypad is an external keypad used in conjunction with the VisionZ family of inspection products.

Power off the VisionZ system. Insert the mini-din plug connector at the end of the VisionZ console cable into the mini DIN socket on the VisionZ unit. For example the diagram below shows the mini-DIN socket to which the VisionZ console connects on a VisionZ Benchtop system.




























Turn on the unit. The VisionZ console LED should light up green indicating that it has power and is up and running.





































Controls

The following table describes the button operation of the VisionZ console. Note that most buttons have multiple functions depending on the keypad mode.

Key



- SP: Short Press
- LP: Long Press
- SP/LP: Short or Long button press
- NA: Not Applicable
- OSD: On Screen Display

Button	Short Press	Long Press	Indicator		Description
			OSD	LED	
	1. ZOOM + 2. Grid/Cursor + 2. LED INTENSITY + 3. IRIS SIZE + 4. CONTRAST +	NA	  	    	<u>Default Mode</u> SP/LP: Zoom in <u>Measurement Mode</u> LP: Move Y Grid / Cursor up <u>Light Mode</u> SP/LP: Increase LED intensity <u>IRIS Mode</u> SP/LP: Increase IRIS size <u>Hi-Contrast Mode</u> SP/LP: Increase contrast
	1. ZOOM – 2. LED INTENSITY – 3. IRIS SIZE – 4. CONTRAST –	NA	  	    	<u>Default Mode</u> SP/LP: Zoom out <u>Measurement Mode</u> LP: Move Y Grid / Cursor down <u>Light Mode</u> SP/LP: Decrease LED brightness <u>IRIS Mode</u> SP/LP: Decrease IRIS size <u>Hi-Contrast Mode</u> SP/LP: Decrease contrast
	1. MANUAL FOCUS FAR 2. BRIGHTNESS + 3. Grid/Cursor - 4. GAIN +	NA	FAR  	   	<u>Focus Mode</u> SP/LP: Move the focus point further away from the camera <u>Measurement Mode</u> LP: Move X Grid / Cursor right <u>Auto Exposure Mode</u> SP/LP: Increase brightness in Automatic Exposure mode. Overridden by manual focus when in Manual Focus Mode <u>Gain Mode</u> SP/LP: Increase gain in Manual Exposure mode

	1. MANUAL FOCUS NEAR 2. BRIGHTNESS – 3. Grid/Cursor - 4. GAIN –	NA	NEAR  	   	<u>Focus Mode</u> SP/LP: Move the focus point nearer to the camera <u>Measurement Mode</u> LP: Move X Grid / Cursor Left <u>Auto Exposure Mode</u> SP/LP: Decrease brightness in Automatic Exposure mode. Overridden by manual focus when in Manual Focus Mode <u>Gain Mode</u> SP/LP: Increase gain in Manual Exposure mode. Overridden by manual focus when in Manual Focus Mode
F 	FOCUS TOGGLE <i>(Manual or Auto)</i>	EXPOSURE TOGGLE <i>(Manual or Auto)</i>	AF/MF ME	 	SP: Toggle between manual focus mode and auto focus. When in Manual focus mode the VisionZ console LED will turn red. LP: Toggle between Auto Exposure Mode and Manual Exposure Mode
 	CAPTURE IMAGE	ENTER MEMORY MODE	 M	 	SP: Capture the current image displayed. LP: Enter Memory Mode
 M1	CYCLE GRID / CURSOR MODES MEMORY RECALL 1	SELECT GRID TYPE / SWITCH CURSOR ENTER CONTRAST MODE CYCLE CALIBRATION UNITS SAVE MEMORY 1		    	<u>Default Mode</u> SP: Cycle between grids / cursors LP: Default Mode: Enter HI-Contrast Mode. Use  and  buttons to control contrast. <u>Calibration Mode</u> LP: Cycle calibration units <u>Measurement Mode</u> LP: Change Grid type or switch cursor selection <u>Memory Mode</u> SP: Memory recall 1 in Memory Mode LP: Save current settings to memory 1 in Memory Mode
 M2	OVERVIEW MEMORY RECALL 2	CYCLE CROSSHAIR COLOUR EXIT CALIBRATION SAVE MEMORY 2	M	    	<u>Default Mode</u> SP: Do overview function LP: Toggle Cross Hairs. <u>Calibration Mode</u> LP: Exit calibration mode <u>Memory Mode</u> SP: Recall memory 2 in Memory Mode LP: Save current settings to memory 2 in Memory Mode
 M3	LIGHT ON / OFF MEMORY RECALL 3	ENTER LIGHT CONTROL MODE SAVE MEMORY 3		   	<u>Default Mode</u> SP: Toggle light on / off LP: Enter light control mode <u>Memory Mode</u> SP: Mem recall 3 in Memory Mode LP: Mem save current settings to Mem 3 in Memory Mode

Using the VisionZ console







Default Mode

This mode is where the camera is in auto-exposure mode. The arrow buttons  and  revert to zoom in and zoom out functions respectively.

On power up the camera will revert to the last used settings for zoom position, exposure, focus, Iris, gain, brightness and contrast settings.



Status Bar



The status bar is located at the top left of the screen. It displays the current operating mode of the VisionZ. The following table describes the meaning of each symbol:

AE	Automatic Exposure mode
ME	Manual Exposure mode
AF	Automatic Focus
MF	Manual Focus
	Light Intensity adjust mode
	Hi Contrast adjust mode
	Gain adjust mode
	Brightness adjust mode
	Iris adjust mode
M	Memory select mode
	Freeze mode


Auto Exposure Mode







When the unit is in this mode the exposure settings are controlled automatically by the camera (this includes iris and gain control). The status bar will show the **AE** symbol.



The arrow buttons  and  act as zoom in and zoom out functions respectively unless the unit is in Light Mode or Hi-Contrast mode.

The  and  buttons control the brightness function when in Auto Exposure mode unless Manual Focus mode is engaged. Manual Focus mode is indicated when the LED is red.


Manual Exposure Mode

This mode is entered with a long press of the Focus button . The **ME** symbol will appear on the top left of the screen to indicate that the unit is in Manual Exposure mode. It will remain there while the unit remains in Manual

Exposure Mode. Notice that the Gain symbol  and Iris symbol  are also displayed in the status bar to indicate new function for the arrow buttons. The arrow buttons  and  now control the Iris function within the camera. The  button will open the Iris further while the  button will close the Iris in discrete steps.

The  and  buttons now control the gain of the image. Note that if Manual Focus is engaged then these buttons will be overridden and will be used to control the focus of the camera (indicated by a red LED).

Memory Mode

Press and hold the  button to enter memory Mode. The LED will light up orange and the **M** symbol will appear on the status bar. In this mode the three circular buttons M1, M2 and M3 on the bottom of the keypad are associated with the three available memory presets.

To recall the memory settings in memory 1 press the M1 button. To save the current settings to memory 1 press and hold the M1 button until a sound is heard. Similarly perform the same operations for buttons M2 and M3 to save/recall memory settings for memory 2 and memory 3 respectively. To exit memory mode press any key except M1, M2 or M3.



The following parameters are saved during a memory save operation:

- Zoom Position
- Light setting/intensity
- Brightness setting
- Gain setting
- Iris Setting








- Focus
- Focus Position
- Contrast Setting
- Calibration data

Manual Focus Mode


To enter Manual Focus mode press the focus button . The LED will turn red and a sound will be played. The status bar will show the **MF** symbol. The camera is now operating in manual focus mode from the current focus position.

The  button is used to move the focus point further away from the camera. The  button is used to move the focus point nearer the camera. Note that the longer you hold the focus buttons the faster the focus point will move to help reach the required focus point quickly. To exit Manual Focus mode simply press the focus mode button again and the LED will turn green and the camera will return to Auto Focus mode.

Light Intensity Mode

To enter light mode press and hold the M3 button . You will hear a sound play and the Light icon  will appear on the status bar. The arrow buttons  and  now control internal light intensity on the unit. Pressing  will increase the brightness of the LED while pressing  will decrease light intensity. To exit this mode press and hold the M3 button  again or wait for it to time out.

Light On/Off

To turn the light off completely press the M3 button . You will hear a sound play and light will turn off. Press the button again to return the light back to the previous setting.

Hi-Contrast Mode












Press and hold the M1 button  to enter this mode. You will hear a sound play and the contrast icon  will appear on the screen. The arrow buttons  and  now control the image contrast. Pressing  will increase the contrast of the LED while pressing  will decrease contrast. Press the  button to the maximum setting to return back to normal colour mode. To exit this mode press and hold the M1 button  again.

Image Capture



If the VisionZ unit to which the console is connected has the VisionZ Capture Control hardware and PC connected then image capture is possible. To save the current image displayed press the capture button . An icon will flash on the screen and a sound will be played.

See the VisionZ Capture Control user guide for more information.


Magnification

Press the Zoom-Up  button to enlarge the image and Zoom-Down  to reduce the image size. The unit will make a sound to indicate when it has reached maximum or minimum zoom limits.


Freeze

To freeze the image, press the  M2 button and immediately press the  M1 button. To unfreeze the image, press any other button. Note that capture is allowed in freeze mode.

Overview



Overview allows you to easily locate a point of interest on the object you are viewing. Press and release the Overview button  M2, to make the camera zoom out fully and revert to full-colour mode. A cross hair is displayed in the centre of the screen as an aid to location. Place the point of interest under the cross hair and press any key to restore the magnification to the previous level.

Cross Hairs


Cross hairs are two artificially generated lines that appear on the screen in both the horizontal and vertical directions which intersect at the centre of the screen. Press and hold the Overview button  M2 to display the crosshairs. When the cross hairs appear release the button. To remove the cross hairs press and hold the overview button once again.

If you would like to change the colour of the cross hairs then press and hold the overview button, however do not release the button when the cross hairs appear. Instead keep the button pressed and you will see the cross hair change colour. The colours will cycle through the following sequence: white, green, blue, red, yellow, purple, cyan and then back to white again. Release the button when the desired colour is displayed.

Brightness and Gain






The image brightness can be adjusted to suit your preference. When the unit is in Auto Exposure mode, the  and  buttons control brightness level. When the unit is in Manual Exposure mode, (indicated by an **ME** symbol at the top left of the screen), these buttons will control gain. The setting you choose will be saved and used subsequently for that mode of operation.


Grid and Cursor Measurement

The VisionZ console can be used in conjunction with the VisionZ to perform on screen measurements. Pressing the  M1 button will cycle between grids, cursors and normal (non measurement) modes.





Calibration Mode

In order to measure an on-screen object the system must be calibrated first. Place a suitably calibrated device such a ruler or calibration sticker under the camera. Use either auto focus or manual focus to allow the camera to focus on the ruler.






To enter calibration mode press and hold  M3 button while immediately pressing the  M2 button. The screen *should now display CAL MODE and two vertical cursors should appear. Notice that the unit will automatically enter manual focus. At this point the camera should be focussed on the calibration device. Press the  M1 button to select the calibration unit (e.g. 1mm, 5mm, 10mm...). Using the  and  buttons adjust the left and right cursor so that they align on the ruler and match the desired calibration unit.*

Press and hold the  M2 button to exit calibration mode. The unit is now calibrated. Note that the unit will lose calibration if the zoom or focus levels are changed.






Grid Mode

In this mode a grid will appear on the screen. The grid is adjustable is size in both the X and Y directions. To adjust the grid size in the X direction use the  and  buttons. To adjust the grid size in the Y direction use the  and  buttons. The distance between the grid lines in both X and Y directions is displayed at the top right corner of the screen.



Grid Adjust Mode

In grid mode press and hold the  M1 until a red grid appears on the screen. The grid position is adjustable in both the X and Y directions. To adjust X position of the grid use the  and  buttons. To adjust the grid position in the Y direction use the  and  buttons.

Cursor Mode

Cursor mode allows you to take measurements using cursors in both the X and Y directions. The X direction cursor can be controlled using the  and  buttons and the Y direction cursor using the  and . The active cursors are highlighted in red. To change the active cursors press and hold the  M1 button.

Front Keypad Lockout

In certain applications it may be desirable to disable the operation of the front keypad on the VisionZ camera head. To do this press and hold the  M1 button and immediately press the  M3 button until you see the message "FRONT KEYPAD LOCKED". The only button operational on the front keypad is the power button. To unlock the keypad repeat the key press. The VisionZ will remember this setting even after powering off the unit. The unit can only be unlocked using the VisionZ console. If the VisionZ console is not connected at power up the front keypad will remain locked. A notification will be displayed at start-up to indicate this.

Troubleshooting

If the VisionZ console fails to operate check the following:

- Ensure that the plug is securely inserted into the VisionZ unit.
- Inspect the cable for damage including fraying.
- Check that the LED is green. If the LED does not turn on the check that the VisionZ unit to which the keypad is connected is powered on.

Note: Only connect the VisionZ console when the VisionZ unit is powered off.

Taking Care of your Keypad

Clean with a soft, dry cloth. Do **not** use a wet or coarse cloth. Avoid detergents and abrasive substances or solvents to clean it.

Appendix: Functions and Terms

Zoom Lens: The zoom lens makes an object appear closer or further away.

Iris: The Iris controls the amount of light entering the camera. Changing the Iris can affect the depth of field particularly at high magnification.

Gain: Increasing the video gain boosts the video signal level to make subjects appear brighter in low-light situations.

Focus: Focus is seen as the region of an image that is displayed in clarity while the other regions of the image appear blurry. There are two types of focus Automatic and Manual. Automatic focus keeps the current image in focus by analysing the image and updating the focus lens continually. Manual focus is whereby the user can set the focus point near or far away. Generally automatic focus is used for general purpose viewing, however when a object is to be viewed under high magnification, manual focus has the advantage of being able to change the focus point so that different parts of the object of interest can be viewed clearly without having to adjust camera height.

Hi-Contrast: In this mode darker parts of the image are made darker and brighter made brighter. For example, this may be particularly useful for highlighting text on an object that otherwise would be difficult to read.

Brightness: This is used to increase or decrease the video signal level to help set the black level for truer picture reproduction.

Exposure: There are two types of exposure modes, automatic and manual. Automatic exposure controls functions such as shutter, Iris and gain settings to maintain the optimum exposure level. Manual exposure allows manual control of gain and iris which may help in low light conditions and where improved depth of field is required.

Specifications

Voltage	3.3V
Weight	180g
Temperature	Storage: -10°C to +60°C. Operating: +5°C to +40°C





Warranty

This product is warranted to be free from defects in material and workmanship for a period of one year from the date of invoice to the original purchaser.

If during the warranty period the product is found to be defective, it will be repaired or replaced at facilities of Vision Engineering or elsewhere, all at the option of Vision Engineering. However, Vision Engineering reserves the right to refund the purchase price if it is unable to provide replacement, and repair is not commercially practicable or cannot be timely made. Parts not of Vision Engineering manufacture carry only the warranty of their manufacturer. Expendable components such as fuses carry no warranty.

This warranty does not cover damage in transit, damage caused by misuse, neglect, or carelessness, or damage resulting from either improper servicing or modification by other than Vision Engineering approved service personnel. Further, this warranty does not cover any routine maintenance work on the product described in the user guide or any minor maintenance work which is reasonably expected to be performed by the purchaser.

No responsibility is assumed for unsatisfactory operating performance due to environmental conditions such as humidity, dust, corrosive chemicals, deposition of oil or other foreign matter, spillage, or other conditions beyond the control of Vision Engineering.

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